

CLAIMS:

1. A touch sensitive matrix display comprising
a matrix of pixels,
a sensing circuit for sensing a touch position with a first subset of the pixels
forming a first area (A1) of said matrix display,
5 an addressing circuit for addressing a second subset of the pixels forming a
second area (A2) of said matrix display being non-overlapping with the first area (A1) to
display information dependent on the touch position, and
a controlling circuit for controlling the addressing circuit to address the first
area (A1) intermittently during sense area address periods (TA2) to supply display
10 information to the first area (A1) in-between the sense periods (TS) only, a non-address
period of time (TR) between two successive sense area address periods (TA2) being at least
as long as a display area address period (TA1,i) wherein all the pixels of the second area (A2)
are addressed, the pixels having an optical state which, when not addressed, is maintained
longer than the non-address period of time (TR).
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2. A touch sensitive matrix display as claimed in claim 1, characterized in that
said matrix display comprises select electrodes and data electrodes, the pixels being
associated with intersections of the select electrodes and the data electrodes, the sensing
circuit being coupled to a subset of the select electrodes only, for only sensing in the first area
20 (A1).
3. A touch sensitive matrix display as claimed in claim 2, characterized in that
the select electrodes comprise a first set of select electrodes and a second set of
select electrodes, the data electrodes comprise a first set of data electrodes and a second set of
25 data electrodes, the first set of select electrodes and a first set of data electrodes being
associated with the first area (A1), the second set of select electrodes and the second set of
data electrodes being associated with the second area (A2), and in that
the addressing circuit comprises

a first select driver coupled to the first set of select electrodes, and a first data driver coupled to the first set of data electrodes for intermittently sensing touch input and supplying display information to the first area (A1), and

5 a second select driver coupled to the second set of select electrodes, and a second data driver coupled to the second set of the data electrodes for addressing the second area (A2).

4. A touch sensitive matrix display as claimed in claim 2, characterized in that the data electrodes are divided in a first group (G1) which is associated with the display area (A2), and a second group (G2) which is associated with the sense area (A1),
10 in that

said display further comprises switches (Si) being arranged between corresponding data electrodes of the first and the second group (G1, G2), and in that

15 the control circuit is adapted for closing the switches (Si) when the sense area (A1) is addressed, and for disconnecting the corresponding data electrodes of the first and the second group (G1, G2) during the sense periods (TS) wherein the touch events are sensed in the sense area (A1).

5. A touch sensitive matrix display as claimed in claim 2, characterized in that
20 said display further comprises sense electrodes arranged in parallel with the data electrodes and extending in the first area (A1) only,
the addressing circuit comprises a select driver coupled to the select electrodes, and a data driver coupled to the data electrodes for supplying display information to both the first area (A1) and the second area (A2), and

25 the sensing circuit is coupled to sense electrodes and at least a subset of the select electrodes being associated with the first area (A1).

6. A touch sensitive matrix display as claimed in claim 2, characterized in that
the control circuit is adapted for controlling the addressing circuit to address
30 the second area (A2) during at least two successive address periods (TA1,i) being spaced apart by a sensing period (TS), and for controlling the sensing circuit to sense touch events during the sensing period (TS).

7. A touch sensitive matrix display as claimed in claim 1, characterized in that said matrix display is an electrophoretic display.

8. A display apparatus comprising
5 the touch sensitive matrix display as claimed in claim 1, and
a signal processor for supplying input data (VI) to the addressing circuit in
dependence on the touch position sensed to generate at least part of an image to be displayed
on the touch sensitive matrix display.

10 9. A method of touch sensing in a touch sensitive matrix display comprising a
matrix of pixels, the method comprising

sensing a touch position with a first subset of the pixels forming a first area
(A1) of said matrix display, wherein the pixels have an optical state which, when not
addressed, is maintained longer than a sense period (TS) during which the sensing circuit
15 senses the first area (A1),

addressing a second subset of the pixels forming a second area (A2) of said
matrix display being non-overlapping with the first area (A1) to display information
dependent on the touch position,

controlling the addressing circuit to address the first area (A1) intermittently to
20 supply display information to the first area (A1) in-between the sense periods (TS) only.